

Rhoads '426 patent in view of U.S. Patent No. 4,981,370 to Dziewit and further in view of U.S. Patent No. 4,467,139 to Mollier; and claim 91 was rejected under 35 U.S.C. § 103(a) as obvious over the Rhoads '426 patent in view of the Dziewit '370 patent and further in view of the Mollier '139 patent and U.S. Patent No. 5,677,955 to Doggett.

By this Response the drawing objection and prior art rejections are traversed and arguments in support thereof are provided.

Drawing Objections

The Office Action Summary (PTOL-326) asserted that the drawings were objected to.

RESPONSE

Applicants initially note that the drawing objection asserted on the Office Action Summary is not detailed in the Detailed Action of the currently outstanding Office Action. Applicants are therefore unable to more fully respond to the asserted objection because the Examiner has not provided any basis for the objection. Applicants have reviewed the drawings and believe that the objection alleged in the Office Action Summary is a typographical error resulting from carryover of the Office Action Summary of the prior Office Action; and Applicants respectfully submit that all grounds for objection were corrected by the Response and Amendment filed March 3, 2004 in response to the prior Office Action. However, if the Examiner has a current objection to the drawings Applicants respectfully request that such objection be set forth in the next Office Action. Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

Claim Rejections

35 USC § 112

The Examiner rejected claims 10, 21, 32, 43, 54 and 65 as being indefinite, in particular because they are alleged to be "circular in nature in that they use the second e-seal to define the second e-seal."

RESPONSE

Applicants respectfully disagree and therefore traverse the rejections. These claims all indicate that the second e-seal includes content and a visible seal of an authority. There is no circular definition here. The "of the second e-seal" which qualifies "content" is a label or identifier, distinguishing it from the content of the original document and first e-seal, but in no way makes the definition circular. Likewise the indication that the content of the second e-seal includes the content of the original document and first e-seal is not circular. Similarly, there is no circularity in the indication that the content digest embedded in the visible seal is dependent on the content of the second e-seal.

Perhaps the Examiner is of the opinion that everything included in the second e-seal is its content. As such, the second e-seal can never contain anything more or less than its content and no part of the content can be dependent on the content itself. However, that would make the structure of not just these claims objectionable, but other claims too. Besides, this is clearly not correct - after all the index of a book depends on and varies with the content of the book.

Accordingly, reconsideration and withdrawal of the rejections is respectfully requested. However, if the Examiner persists in the rejections, the Examiner is respectfully requested to indicate what part he considers to be circular and in what respect it is asserted to be so.

35 USC §§ 102-103

The Examiner rejected various of the claims as being unpatentable over individual prior art and combinations of particular prior art.

Applicants comment below on certain of the rejections. However, the absence of a comment on a particular claim is not an acceptance that the Examiner's rejection is correct.

- i. Rhoads. (US Patent 5,768,426)

The Examiner rejected claims 1 to 3, 5 to 9, 11 to 14, 16 to 20, 22 to 25, 27 to 31, 33 to 36, 38 to 42, 44 to 47, 49 to 53, 55 to 58, 60 to 64, and 66 to 86 under 35 U.S.C. 102(b) as being anticipated by Rhoads. (US Patent 5,768,426). With respect, Applicants must disagree with the Examiner's rejections and therefore traverse the rejections for reasons as set out below.

General Comments:

Rhoads describes a method which impresses an identification code signal on a carrier to be identified (such as an electronic data signal or a physical medium) in a manner that permits the identification signal later to be discerned and the carrier thereby identified. The method and apparatus are characterised by robustness despite degradation of the encoded carrier, and by holographic permeation of the identification signal throughout the carrier, e.g. an identification code number is distributed in a largely integral form throughout an encoded signal or image.

In essence, what is described in Rhoads is a typical digital watermarking method; it embeds certain information such as identification code into the whole image. Its robustness relies on the principles of "spread spectrum" or "holographic permeation" – any bit of information is spread onto the whole image, rather than residing onto a particular location. It can be used to embed information into digital documents, and the information can be retrieved and verified with the registered information. The verification process can be applied to printed document by scanning the document back to its digital form.

In Rhoads, the watermarking method may be used to information into images, but that information is embedded in a "holographic", or in other words, "distributed" manner. Any verification should be done in a "holographic" way and with reference to the pre-registered information.

The problem here to address is embed copyright information of the original owner into the digital content, and the copyright information should persist even after users or attackers trying to remove the copyright information by using various processing (e.g. filtering or geometric transforming) or by destroying or removing part of the content. In other words, the watermarking algorithms should be "robust".

It is important to note:

- 1) The verification is done against registered identification information. As such, there must be a centralised “registry” for the identification information for all possible images or documents.
- 2) The method is typical one for tracing copyright – the “holographic” property makes it possible to recover the identification code even if some part of image / document is changed or destroyed.

The presently claimed invention relates to protecting the legitimacy of a digital document and its printed version. Legitimacy protection and copyright tracing are very different in nature, and the methods associated with them are very different as well. What is described in Rhoads, the verification of a pre-registered identification code, cannot solve document legitimacy protection issue.

The presently claimed invention relates to “authentication”. In using the invention certain authentication information, for example in form of seals, capturing the key content of the document is added to the document. Users or attackers have to preserve the authentication information to prove that the document is authentic. To forge the document, attackers must forge the authentication information.

Rhoads therefore contrasts with the present invention which relates to document authentication, where the originality of the document is important, and changing any part of content is not allowed or should be discernible. These are totally distinct technologies; they can be used together on the same document, but are not alternatives: Rhoads is for identifying the origins of the document even if there have been changes; the present invention is for determining if there have been changes (which Rhoads does not do).

With the presently claimed invention, the visible seals, or optically sensitive components do not need to be “distributed”. Instead, they are “local”, and can be verified with certain means rather than a centralised pre-registered identification information as Rhoads requires.

Even the abstract of Rhoads makes it quite clear that its method and apparatus are characterized by robustness, despite degradation of the carrier. This means that the changes to the carrier should not affect the identification signal. This is completely the opposite of the present invention, where the whole point is that any changes to or copying of the document will be apparent, leading to changes in the optically sensitive or sensible component.

As such, any reading of Rhoads must take into account what it is trying to achieve and cannot be read to have a meaning that is incompatible with what the person skilled in the art would understand.

Independent Claims 1, 12, 23, 34, 45, 56, 69, 75, 81

According to the Examiner, every feature of these claims is present in Rhoads. We believe that is clearly not the case

1. "content digest" - the content digest is a digest of the content of the original document. The Examiner is equating this to an identification word (col. 9, lines 17-31). Perhaps his point is that, because an identification word identifies a document (in this case uniquely), if one knows the word one knows what is on the document. However, this is the wrong way round. The identification word is, in effect, just a name or ID. The name identifies the document. The content digest is an indication of what is in the document and is a "signature" of the content. In itself a name provides no information of content. Two documents with the same identification word do not necessarily have the same content, while the same content digest means the same contents. Likewise, two documents with different identification words could have the same content, while different content digests mean different contents.

2. "electronic seal ... including a visible seal" - the Examiner has cited col. 3, lines 47-49 to the effect that Rhoads teaches this feature. The applicants completely disagree; Rhoads teaches the opposite to what the Examiner has indicated. This part of the description indicates that the method (provided by the invention of Rhoads)

should not compromise the innate quality of the material being sold, whereas localised logos on images compromise that innate quality. As such, the method of Rhoads is teaching against the use of localised logos.

That being the case, what in Rhoads counts as an electronic seal and what is the visible seal of an authority? It most certainly is not the identification word which is not local but "holographic" and distributed onto every part of the document.

3. "for authenticating said original document in original form" - according to the Examiner embedding the identification word and a code into the digital image in Rhoads provides this feature. However, he appears to have taken it as so minor a point as not to indicate how this counts as authentication of the original document in original form. This feature means that it is possible to know if this is the original document in original form or a copy or a modified version. On the other hand, there is nothing in Rhoads about this. All Rhoads describes is a system for determining if a document or part of a document is copied from another document. The identification word and a code embedded into the digital image merely indicate origin, without indicating whether the document is an original or in its original form.

Merely adding a robust identification word and a code does not authenticate the document; it simply indicates origin.

4. "optically sensitive or sensible component" - the Examiner talks about normalising pixel levels so that a comparison can be made. His point seems to be that if the pixel levels have to be normalised, that means they must be optically sensitive. Yes, the image is re-sized and optimised for black-level, brightness gain and gamma of the two images. However this is so a proper comparison can be made. "normalising" is a necessary step before comparison in order to be "robust" to all types of processing done by possible attackers. However, the same action would be taken if the images are not from a copy as would be taken if they were from a copy. The need for these changes do not, in themselves, denote any copying or modification. Thus this does not denote the feature of an "optically sensitive or sensible component" and certainly not

one that has the claimed features of containing information for indicating copying or modification.

If such normalisation were undertaken on a document as claimed, then it would automatically affect the optically sensitive or sensible component, thereby making any later comparison of no use. For the present invention, users keep a document completely unchanged to prove its authenticity. Thus what is described in Rhoads at this point most definitely cannot equate to what is claimed.

Every independent claim has these distinctive features and others. For example independent claims 23, 34, 45 and 56 have the feature of adding the optically sensitive or sensible component to the authenticated document. If the Examiner is correct that the document is authenticated by embedding the identification word and code (and we do not cede that he is correct), then there is still no "optically sensitive or sensible component" that is added to the already authenticated document.

Further independent claims 69, 75 and 81 have the feature of verifying the legitimacy of an authenticated electronic document. All Rhoads has is determining (possibly verifying) whether the component came from a particular source, but it does not verify legitimacy and certainly not of an authenticated document.

At this stage the applicant could go on with many further differences between the claims and Rhoads. The expectation is that the Examiner will withdraw his rejections on the basis of the differences pointed out so far. However, if the Examiner persists in the rejections and provides explanation of exactly how the different features in Rhoads anticipate the features as claimed, given the arguments presented, then further arguments and differences will be presented.

Claims 2, 13, 24, 35, 46, 57 (and other claims relating to watermarking)

These claims require a watermark in the e-seal. If the e-seal is the identification word, then what is the watermark in Rhoads that is in the e-seal? Rhoads does not appear to teach such a further watermark.

Claims 5, 16, 27, 38, 49, 60

The Examiner indicates that, according to Rhoads, the identification information could be a fingerprint and this meets the limitation of the content digest being a condensed representation of the original document generated by selecting key items of the content. However, the portion of Rhoads cited by the Examiner, at column 2, lines 54 to 57, is a reference to prior art and no indication that a fingerprint is used in the method described in Rhoads. Indeed, the paragraph that follows, from column 2, line 65 to column 3, line 25, indicates that Rhoads is not contemplating using fingerprints. Thus, Rhoads teaches directly away from the very point the Examiner indicates Rhoads is teaching.

Claims 6, 17, 28, 39, 50, 61

The Examiner has indicated these are anticipated by Rhoads without any explanation of what counts as the content digest being a condensed representation of the original document and where in Rhoads this is generated by block-wise digest derivation. As this rejection has not, therefore, been well-made, if the Examiner still persists in the rejections we would ask him to explain this before issuing a final office action.

Claims 8, 19, 30, 41, 52, 63

The Examiner indicates that, according to Rhoads, the optically sensitive information could be a magnetic strip on a credit card and this meets the limitation of the optically sensitive component including a serial number. Firstly, what is not clear is how a standard magnetic strip can be considered an optically sensitive component with the properties indicated in the claims on which these claims depend. We agree that a magnetic strip is optically noticeable. However, it is not optically sensitive. Moreover, as with the portion about fingerprints, the portion of Rhoads cited by the Examiner, at column 2, lines 56 to 59, is a reference to prior art and no indication that such magnetic

strips are used in the method described in Rhoads. Indeed, as with the portion about fingerprints, the paragraph that follows, from column 2, line 65 to column 3, line 25, indicates that Rhoads is not contemplating using such magnetic strips. Thus, Rhoads teaches directly away from the very point the Examiner indicates Rhoads is teaching.

ii. Rhoads (US Patent 5,768,426) in view of Stefik et al. (US Patent 6,233,684)

The Examiner rejected claims 4, 15, 26, 37, 48 and 59 under 35 U.S.C. 103(a) as being unpatentable over Rhoads in view of Stefik et al.

As was argued in response to the previous office action, Stefik et al. at column 13, lines 51 to 52 does indeed state that "the location of the watermark and the corresponding embedded data is then found". However, there is no indication whatsoever that the embedding address of the watermark is the key for encrypting any data, as the Examiner objects, nor is this implicit. There is no mention of encryption within Stefik et al., only that data may be compressed (and there is no specific disclosure of reading the embedded data in such a case). Further, even if there were some form of encryption, there is nothing that indicates a link between an embedding address and a key. Given the use of the singular verb "is" in the sentence "the location of the watermark and the corresponding embedded data is then found, step 1302" means that a singular location contains both the watermark and the corresponding embedded data. It is not possible from this statement to derive anything to the effect that the embedding address of watermark is used as a key for embedded data.

Indeed, this portion of Stefik et al. is entitled "Reading the embedded data contained in the watermark". Quite clearly, this just means that once you have found the watermark you have found the data embedded therein. This is quite different from disclosing that the address of a watermark is used as an encryption key. This feature is not taught.

- iii. Rhoads (US Patent 5,768,426) in view of Dziewit et al. (US Patent 4,981,370) and further in view of Mollier (US Patent 4,467,139)

The Examiner rejected claims 87 to 90 and 92 to 95 under 35 U.S.C. 103(a) as being unpatentable over Rhoads in view of Dziewit et al. and further in view of Mollier.

Rhoads fails to teach many of the features attributed to it by the Examiner. In particular, and as discussed above, it fails to teach the claimed "content digest" or the claimed "e-seal" with the visible seal of an authority.

Rhoads relates to the identification of the origin of the content of a document (see column 1, lines 12 to 16). Dziewit et al. relates to a system for allowing two parties to sign a contract simultaneously using digital signatures, for which purpose the origin of the documents is not so relevant as the identity between the two documents. Mollier relates to the transmission of signed messages.

The person skilled in the art would not combine the teachings of these three documents. What they teach points in different directions. If Rhoads relates to the identification of the origin of the content of a document, the skilled person is not going to see any reason to combine it with the teaching of Dziewit et al. which allows two parties to sign a contract simultaneously using digital signatures. Distribution to persons unknown is expected or not important in Rhoads (see the example relating to a distributed image, at column 10, lines 59 to column 12, line 16). The whole point of Dziewit et al. is for authenticated communication between two specific parties. There is no reason taught in or readily apparent from Rhoads for the skilled person to want to be in authentication communications with another party or even to want to establish a secure communication link between several parties. On what basis would he then seek out the teachings of Dziewit et al? None that is apparent from Rhoads. Even if the skilled person did decide he wanted to look into establishing a secure communication link, he would be looking for such teaching in art relating to identifying information, not in authenticating documents, not least because authentication is of no relevance to the teaching of Rhoads.

Applicants respectfully submit that, in combining these three documents here and the four documents in the later rejections, the Examiner is ignoring the required tenets for applying 35 USC 103, as set out in the MPEP at section 2141:

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

In particular, there is absolutely nothing in Rhoads that suggests the desirability and thus the obviousness of making the combinations. Additionally, we would respectfully comment that the Examiner appears to be working from a hindsight position.

Claim 87

As well as the skilled person having no reason for combining various documents as indicated by the Examiner, Dziejewicz et al. does not teach sending a protected signed electronic document to a receiving party, as was argued in response to the previous office action, and those arguments are incorporated by reference too.

The Examiner also indicates that it would have been obvious to use the teaching of Mollier to issue a receipt to the sender. However, this ignores the problem that the skilled person has no motivation or teaching for doing any of these things. What is the purpose of the receipt and why would it be sent? The cited prior art fails to answer these points.

Claim 88

Rhoads fails to disclose, inter alia, verifying the legitimacy of any document, let alone one as claimed here. Also as discussed earlier, Rhoads fails to teach an optically sensible component as claimed.

Claim 89

The Examiner mentioned this was obvious but failed to provide any reasoning. The arguments presented in the previous office action apply here too. Additionally, as this rejection has not been correctly made out, we ask for a further office action prior to any final office action to address the rejection, should there still be one outstanding.

Claim 90

Presumably the Examiner is asserting that storing electronic certificates in an electronic safe deposit box is anticipated by storing data on multiple disks or on a memory that provides a dual copy protection scheme. However, the skilled person would not be taught by the combination of Rhoads, Dziewit et al and Mollier to produce any electronic certificates. Nor is saving data onto multiple disks or on a memory that provides a dual copy protection scheme, the same as storing in a safe deposit box. Such a box restricts access. What is taught in Mollier does not.

- iv. Rhoads (US Patent 5,768,426) in view of Dziewit et al. (US Patent 4,981,370) further in view of Mollier (US Patent 4,467,139) and further in view of Doggett (US Patent 5,677,955)

The Examiner rejected claim 91 under 35 U.S.C. 103(a) as being unpatentable over Rhoads in view of Dziewit et al. further in view of Mollier and further in view of Doggett.

The Examiner is now up to mosaicing 4 documents for interrelated features. Again, in the way this is done, we believe this to be contrary to the required tenets for applying 35 USC 103

Conclusion

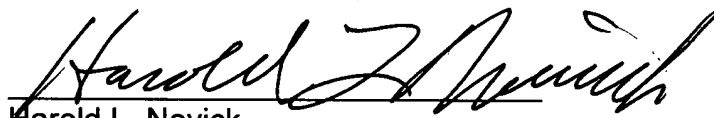
In view of the above remarks Applicants submit that none of the claims is rendered unpatentable on the basis of the prior art as cited. Applicants therefore ask that the Examiner withdraw his claim rejections and issue a notice of allowance in the near future.

Respectfully submitted,

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